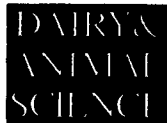


PENNSTATE



College of Agricultural Sciences



E-I-E-I-O

From Dairy and Animal Science at Penn State

**RESEARCH EFFORTS TO REDUCE BABY PIG LOSSES**  
 Ronald S. Kensinger  
 Associate Professor  
 Animal Nutrition/  
 Physiology

**Defining The Problem**

During the past decade, my laboratory group has studied various aspects of mammary development and regulation of milk synthesis in the sow mammary gland. Much of this research was rather fundamental in nature, meaning that we have learned a lot about changes in important cells and molecules within the mammary glands which must occur for successful lactation.

Last year, however, we initiated an exciting research project to learn more about the underlying causes of lactation failure in swine herds. In a state with such a large dairy industry, it may not be obvious that adequate milk production is essential for efficient production of all livestock species, including swine. The issue is best illustrated with the following statistics:

- Sows give birth to an average of 10 live pigs per litter, yet wean only about eight. This loss is very significant given that a swine producer has already invested the rearing costs through puberty and the maintenance cost of that sow's pregnancy by the time the pigs are born. To remain in the swine production business in an increasingly difficult market, producers must



Ronald S. Kensinger

save every pig possible.

- Baby pigs can die from a number of different causes, but most relate to the initial milk production of the sow. Each pig is born with very little energy stored in its body. In fact, it has only a small fraction of the energy stored as fat compared to what can be found in a newborn calf or human infant. And since pigs have little hair covering their bodies, they must receive energy quickly after birth to main-

tain body temperature or they will become chilled and die. This energy comes in the form of colostrum, or first milk, produced by the sow at farrowing. The energy in the colostrum provides a second equally important function to the pigs — the energy to keep them mentally alert and to power their skeletal muscles so they can get out of the way when Mom decides to lay down. Failure to get out of the way leads to a problem known as "flat pig syndrome" — a euphemism for being crushed by the sow. It is true in these cases that the death was caused by the physical trauma, but the real cause likely was insufficient milk production by the sow.

- A third essential function of the energy in colostrum is that it provides the newborn pigs with energy to keep suckling. These pigs will generally suckle about once every hour, and there may be considerable fighting to get to the most desirable teats. Often, a small pig will lose several fights before it can find an available teat. Since the process of milk let-down in a sow is very brief, a piglet must find an available teat quickly or miss a meal.

- Colostrum and milk provide at least a dozen other important attributes for baby mammals, too many to describe here. However, a key

characteristic of colostrum is that it is loaded with maternal antibodies which are absorbed intact into the baby pig's bloodstream. This is another fascinating feat designed by Mother Nature to provide newborn mammals with a ready "package of protection" against foreign particles present in a particular environment. Armed with sufficient antibodies and energy, all derived from colostrum, a newborn pig can make the rough transition to life outside its mother. For a number of different reasons, the sow may not provide baby pigs with enough colostrum to get through this transitional period. The underlying causes of insufficient colostrum and milk production are the focus of our research.

**What Causes Lactation Failure?**

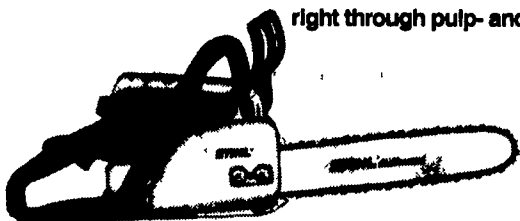
Lactation failure really is any problem leading to insufficient milk production by the sow that results in pigs that fail to thrive. Lactation failure was previously described as the mastitis/metritis/agalactia syndrome, or MMA.

Recently, it has become clear that lactation failure can often occur in cases where there is no evidence of mastitis or metritis. What is clear is that there can be many causes of this important pro-

(Turn to Page C4)

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